

PATENT COOPERATION TREATY

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INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY


(Chapter II of the Patent Cooperation Treaty)

(PCT Article 36 and Rule 70)

REC'D 09 JUN 2006

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Applicant's or agent's file reference 2003P00688WO	FOR FURTHER ACTION		See Form PCT/IPEA/416
International application No. PCT/JP2004/019691	International filing date (day/month/year) 22.12.2004	Priority date (day/month/year) 01.03.2004	
International Patent Classification (IPC) or national classification and IPC INV. B60C23/04 B60C17/00 B29C73/16			
Applicant BRIDGESTONE CORPORATION et al.			
<p>1. This report is the international preliminary examination report, established by this International Preliminary Examining Authority under Article 35 and transmitted to the applicant according to Article 36.</p> <p>2. This REPORT consists of a total of 5 sheets, including this cover sheet.</p> <p>3. This report is also accompanied by ANNEXES, comprising:</p> <p>a. <input checked="" type="checkbox"/> sent to the applicant and to the International Bureau) a total of 2 sheets, as follows:</p> <p style="margin-left: 40px;"><input checked="" type="checkbox"/> sheets of the description, claims and/or drawings which have been amended and are the basis of this report and/or sheets containing rectifications authorized by this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions).</p> <p style="margin-left: 40px;"><input type="checkbox"/> sheets which supersede earlier sheets, but which this Authority considers contain an amendment that goes beyond the disclosure in the international application as filed, as indicated in item 4 of Box No. I and the Supplemental Box.</p> <p>b. <input type="checkbox"/> (sent to the International Bureau only) a total of (indicate type and number of electronic carrier(s)) , containing a sequence listing and/or tables related thereto, in electronic form only, as indicated in the Supplemental Box Relating to Sequence Listing (see Section 802 of the Administrative Instructions).</p>			
<p>4. This report contains indications relating to the following items:</p> <p><input checked="" type="checkbox"/> Box No. I Basis of the report</p> <p><input type="checkbox"/> Box No. II Priority</p> <p><input checked="" type="checkbox"/> Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability</p> <p><input type="checkbox"/> Box No. IV Lack of unity of invention</p> <p><input type="checkbox"/> Box No. V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement</p> <p><input type="checkbox"/> Box No. VI Certain documents cited</p> <p><input type="checkbox"/> Box No. VII Certain defects in the international application</p> <p><input checked="" type="checkbox"/> Box No. VIII Certain observations on the international application</p>			
Date of submission of the demand 09.11.2005		Date of completion of this report 08.06.2006	
Name and mailing address of the international preliminary examining authority:  European Patent Office D-80298 Munich Tel. +49 89 2399 - 0 Tx: 523656 epmu d Fax: +49 89 2399 - 4465		Authorized officer Buergo, J Telephone No. +49 89 2399-8884	



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International application No.
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Box No. I Basis of the report

1. With regard to the **language**, this report is based on

- ☒ the international application in the language in which it was filed
- ☐ a translation of the international application into , which is the language of a translation furnished for the purposes of:
 - ☐ international search (under Rules 12.3(a) and 23.1(b))
 - ☐ publication of the international application (under Rule 12.4(a))
 - ☐ international preliminary examination (under Rules 55.2(a) and/or 55.3(a))

2. With regard to the **elements*** of the international application, this report is based on (*replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report*):

Description, Pages

1-14 as originally filed

Claims, Numbers

1-8 received on 14.11.2005 with letter of 09.11.2005

Drawings, Sheets

1/2, 2/2 as originally filed

- ☐ a sequence listing and/or any related table(s) - see Supplemental Box Relating to Sequence Listing

3. ☐ The amendments have resulted in the cancellation of:

- ☐ the description, pages
- ☐ the claims, Nos.
- ☐ the drawings, sheets/figs
- ☐ the sequence listing (*specify*):
- ☐ any table(s) related to sequence listing (*specify*):

4. ☐ This report has been established as if (some of) the amendments annexed to this report and listed below had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).

- ☐ the description, pages
- ☐ the claims, Nos.
- ☐ the drawings, sheets/figs
- ☐ the sequence listing (*specify*):
- ☐ any table(s) related to sequence listing (*specify*):

* If item 4 applies, some or all of these sheets may be marked "superseded."

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Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability

1. The questions whether the claimed invention appears to be novel, to involve an inventive step (to be non-obvious), or to be industrially applicable have not been examined in respect of:

- ☐ the entire international application,
- ☒ claims Nos. 1-8

because:

- ☐ the said international application, or the said claims Nos. relate to the following subject matter which does not require an international preliminary examination (*specify*):
- ☒ the description, claims or drawings (*indicate particular elements below*) or said claims Nos. 1-8 are so unclear that no meaningful opinion could be formed (*specify*):

see separate sheet

- ☐ the claims, or said claims Nos. are so inadequately supported by the description that no meaningful opinion could be formed (*specify*).
- ☐ no international search report has been established for the said claims Nos.
- ☐ a meaningful opinion could not be formed without the sequence listing; the applicant did not, within the prescribed time limit:
 - ☐ furnish a sequence listing on paper complying with the standard provided for in Annex C of the Administrative Instructions, and such listing was not available to the International Preliminary Examining Authority in a form and manner acceptable to it.
 - ☐ furnish a sequence listing in electronic form complying with the standard provided for in Annex C of the Administrative Instructions, and such listing was not available to the International Preliminary Examining Authority in a form and manner acceptable to it.
 - ☐ pay the required late furnishing fee for the furnishing of a sequence listing in response to an invitation under Rules 13*ter*.1(a) or (b) and 13*ter*.2.
- ☐ a meaningful opinion could not be formed without the tables related to the sequence listings; the applicant did not, within the prescribed time limit, furnish such tables in electronic form complying with the technical requirements provided for in Annex C-*bis* of the Administrative Instructions, and such tables were not available to the International Preliminary Examining Authority in a form and manner acceptable to it.
- ☐ the tables related to the nucleotide and/or amino acid sequence listing, if in electronic form only, do not comply with the technical requirements provided for in Annex C-*bis* of the Administrative Instructions.
- ☐ See separate sheet for further details

**INTERNATIONAL PRELIMINARY REPORT
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Box No. VIII Certain observations on the international application

The following observations on the clarity of the claims, description, and drawings or on the question whether the claims are fully supported by the description, are made:

see separate sheet

VIII. Certain observations

1. Independent claim 1 relates to a "process for monitoring a tire condition and repairing a punctured pneumatic tire having a structure of controlling the damage of the tire produced by the unavoidable running in the punctured state".

The subject-matter of this claim is a mixture of features which are neither related to one another nor to the "process".

First, "monitoring a tire condition" and "repairing a punctured pneumatic tire" are two different processes which would require two different applications. Thus, the feature "detecting a puncture ... internal pressure alarm" corresponds to the *monitoring*, and "refilling gas inside the tire ... equipped on the vehicle" to the *repairing*.

"Mounting on a vehicle an assembly of a pneumatic tire and an approved rim ... " is neither related to the "monitoring" nor to the "repairing". The same applies to the "unavoidable running the punctured tire ... and quickly stop the vehicle".

Furthermore, the above-mentioned features "detecting a puncture ..." and refilling gas inside the tire..." attempt to define the subject-matter in terms of the result to be achieved, which merely amounts to a statement of the underlying problem, without providing the technical features necessary for achieving this result.

Claim 1 does not meet the requirements of Article 6 PCT in that the matter for which protection is sought is not clearly defined.

2. The additional features of dependent claims 2-7 relate to the aspect ratio of the tire and its deformation under zero pressure. These combinations of features do not render the subject-matter compliant with Article 6 PCT.
3. Independent claim 8 is directed to a system for monitoring a tire condition and repairing a punctured pneumatic tire. The same arguments as for claim 1 apply. Also this claim would not meet the requirements of Article 6 PCT.

CLAIMS

1. (Amended) A process for monitoring a tire condition and repairing a punctured pneumatic tire having a structure of controlling the damage of the tire produced by the unavoidable running in the punctured state in a tire-rim assembly which comprises steps of;

mounting on a vehicle an assembly of a pneumatic tire and an approved rim provided with means for raising an internal pressure alarm, said pneumatic tire comprising a carcass of at least one ply toroidally extending from a pair of bead portions to a tread portion through a pair of sidewall portions, a belt of at least one belt layer arranged on an outer circumference of a crown portion of the carcass, and an auxiliary load-supporting structure satisfying a requirement that an deformation quantity of the tire in a radial direction thereof at a rim-assembled state under a load corresponding to 90% of a maximum load capacity at an internal tire pressure of zero is within a range of 30-60% of a section height of the tire under no load at the internal tire pressure of zero;

detecting a puncture of the tire produced during the running of the tire by the means for raising an internal pressure alarm;

unavoidably running the punctured tire to a relatively short-range safe place to quickly stop the vehicle; and

refilling gas inside the tire, which is emitted due to the puncture, to a given internal pressure by a gas filling means equipped on the vehicle while occluding a punctured hole with a puncture repairing means equipped on the vehicle.

2. A process for repairing a punctured pneumatic tire in a tire-rim assembly according to claim 1, wherein the deformation quantity of the tire is within a range of 35-50%.

3. A process for repairing a punctured pneumatic tire in a tire-rim assembly according to claim 1 or 2, wherein the auxiliary load-supporting structure is constructed so as not to at least contact inner surface parts located at the same sidewall portion with each other even in the unavoidable running at the puncture state.

4. A process for repairing a punctured pneumatic tire in a tire-rim assembly according to claim 1, 2 or 3, wherein the auxiliary load-supporting structure is a thin-walled rubber reinforcing layer arranged between the plies of

the carcass or at an inner surface side of the carcass and at least over a full region of the sidewall portion.

5. A process for repairing a punctured pneumatic tire in a tire-rim assembly according to any one of claims 1 to 4, wherein the tire has an aspect ratio of 30-55%.

6. A process for repairing a punctured pneumatic tire in a tire-rim assembly according to any one of claims 1 to 5, wherein the deformation quantity of the tire to be mounted on a front wheel of the vehicle is 35-45%.

7. A process for repairing a punctured pneumatic tire in a tire-rim assembly according to any one of claims 1 to 5, wherein the deformation quantity of the tire to be mounted on a rear wheel of the vehicle is 40-50%.

8. (Amended) A system for monitoring a tire condition and repairing a punctured pneumatic tire having a structure of controlling the damage of the tire produced by the unavoidable running in the punctured state in a tire-rim assembly mounted on a vehicle comprising;

an assembly of a pneumatic tire and an approved rim, said pneumatic tire comprising a carcass of at least one ply toroidally extending from a pair of bead portions to a tread portion through a pair of sidewall portions, a belt of at least one belt layer arranged on an outer circumference of a crown portion of the carcass, and an auxiliary load-supporting structure satisfying a requirement that an deformation quantity of the tire in a radial direction thereof at a rim-assembled state under a load corresponding to 90% of a maximum load capacity at an internal tire pressure of zero is within a range of 30-60% of a section height of the tire under no load at the internal tire pressure of zero;

means provided on the tire-rim assembly for detecting a puncture of the tire during the running and raising an internal pressure alarm;

a puncture repairing means equipped on the vehicle for occluding a puncture hole of the tire; and

a gas filling means provided on the vehicle for refilling gas inside the tire, which is emitted due to the puncture, to a given internal pressure.